

SOME INDIANA ACRIDIDÆ.—II.

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Since my first paper on "Indiana Acrididæ," which was published in the ENTOMOLOGIST for April and May, 1891, was prepared, six additional species have been taken in Vigo County. Of these, one is new to science; a second has been known in the United States only from Florida and North Carolina; of a third, but one specimen, a female, has hitherto been recorded, and from it Dr. Thomas described the species; while a fourth has not before been taken west of New Jersey. With the habits and local distribution, as far as noted, of these six species, together with the description of three of them, the present paper deals.

The following works may be added to the list given in the preceding paper to which the synonymy refers:—

Comstock, J. H.—An Introduction to Entomology, I., 1888.

Fernald, C. H.—The Orthoptera of New England, 1888.

McNeill, Jerome—"A List of the Orthoptera of Illinois" in Psyche, April and May, 1891.

Scudder, S. H.—Boston Journal of Natural History, VII., No. III., 1862.

Thomas, Cyrus H.—In "U. S. Geological Survey of Montana and Adjacent Territory," 1871.

ACRIDIDÆ.

ACRIDINÆ.

TRUXALINI.

1. *LEPTY SMA MARGINICOLLIS*, Serville.

Opomala marginicollis, Thomas, Syn. Acrid. N. A., 1873, 66, 196, 250 (note).

Lepty sma marginicollis, Scudder, Proceed. Bost. Soc. Nat. Hist., XIX., 1877, 87.

Lepty sma marginicolle, Comstock, Introduction to Entomology, I., 1888, 111, fig. 102.

On October 11th, and again on the 24th, a number of specimens of this slender-bodied, graceful species were taken from the tall sedges and rushes which grew near the margin of a large pond in the river bottom of the southern part of Vigo Co. Its range has heretofore been supposed to be a strictly southern one, and Thomas, in the note, loc. cit., states

that it is doubtful if it really belongs to the U. S. fauna. Mr. S. H. Scudder has, however, since recorded it from Florida, and in a personal letter says that it has also been taken in North Carolina, but not farther north.

Its occurrence in numbers as far north as Central Indiana is therefore worthy of record, and can only be accounted for by the presence of the broad and sheltering valley of the Wabash, within the confines of which it finds a climate and vegetation congenial to its taste.

If its habits be the same elsewhere as in Indiana, the name "grass-hopper" is for it a misnomer, for here it is never seen on the grass or ground, and never hops when disturbed, but moves with a quick and noiseless flight for twenty or more feet, to a stem of sedge or rush, on which it alights. The instant it grasps the stem it dodges quickly around to the side opposite the intruder. Then, holding the stem firmly with its short front and middle legs, it draws its slender hind femora close up against the body, and folding the tibiae into position, hugs its support as closely as possible, and remains perfectly motionless. Its body is almost cylindrical, and being of the same general colour as the stalk of the plant on which it rests, it is almost impossible to detect it, unless one sees exactly where it alights. Eight times out of ten a person by approaching quietly can reach his hand about the plant stem and grasp the insect. Its habits excellently illustrate the so-called "protective mimicry" of form and colouring, as it always seems to choose a cylindrical object, and one similar to its own colour before alighting.

As the description given by Thomas, loc. cit., is the only one in American works of reference, and, moreover, is a very short and poor one, I append the following drawn from fresh specimens, and hope that collectors throughout the Northern States will be on the lookout for this interesting and peculiar species :—

Body very slender, sub-cylindrical. Antennæ short, somewhat ensiform. Vertex extending far forward in the form of an equilateral triangle, slightly sulcate on its anterior half. Face very oblique, median carina weak, narrowly sulcate for its entire length; lateral carinæ slight and straight. Pronotum almost cylindrical, slightly divergent on posterior half; median carina present, distinct only on posterior lobe; lateral carinæ obsolete. Prosternal spine short and rounded. Face, vertex, occiput, and disk and sides of pronotum densely punctured. Tegmina exceeding the abdomen by 3 to 5 mm. Wings equal to tegmina in male, slightly shorter in female. Posterior femora very slender, not reaching tip of abdomen. Anal cerci of male slender, tapering, and bent abruptly upward and forward near the base. Sub anal plate narrow, upturned and tapering to a point.

The ground colour is a fawn, unbroken except by a narrow, yellowish stripe, extending from the hind border of eye, along the lower edge of pronotum to coxa of hind

leg In living specimens this line is bordered above by one of dark brown. When the insect is dried the brown fades and the tips of tegmina become darker. Length of body to tip of tegmina, male, 30 mm.; female, 37 mm., of antennæ, male, 8 mm.; female, 6 mm.; of tegmina, male, 20 mm., female, 26 mm.; of posterior femora, male, 14 mm., female, 17.5 mm.

OEDIPODINI.

2. SPHARAGEMON BOLLI, Scudder.

Spharagemon bolli, Scudd., Proceed. Bost. Soc. Nat. Hist., XVII.,
1875, 469.

McNeill, "Orthop. of Ill.," Psyche, VI., 1891,
64.

Dissosteira bolli, Fern., Orth. of N. Eng., 1888, 43.

This species is much less common than *S. balteatum*, Scudd., but three specimens having been secured. It may be readily known from *balteatum* by the higher crest of the pronotum, by the general colour being darker, the bands across the tegmina more distinct, and by having the tip of wing as black as the median arcuate band. It frequents high, dry woods, and moves with a quick, almost noiseless flight, but is clumsy as a hopper.

Sept. 1st, Oct. 17th, in copulation.

ACRIDINI.

3. MELANOPLUS GRISEUS, Thomas.

Caloptenus griseus, Thos., Geol. Surv. Terr., 1871, 454.

Id., Syn. Acrid. N. A., 1873, 165.

A single ♂ of this handsome *Melanoplus* was taken in Putnam County, on August 25th. It hopped across a roadway in the woods in company with numerous specimens of *M. femur-rubrum*, and was at once detected on account of its peculiar coloration.

On October 17th, a ♂ and ♀ were taken from near the base of trees in a high woodland pasture in Vigo County, and again on November 15th a single female was found in a similar locality.

These four are all that I have ever seen. No one of them took to flight, and their movements on the ground were exceedingly clumsy, they being easily captured with the hand. As Thomas, loc. cit., described the species from a single ♀ taken in Ohio, and as I can find no reference to the species other than those cited above, I add the following description of the ♂, drawn from a fresh specimen, together with accurate measurements of both sexes.

The length of *M. femur-rubrum* but thicker bodied. Head rather large with the occiput elevated; eyes prominent. Vertex very narrow between the eyes; the fastigium deeply sulcate; foveola present but minute, their outline circular. Frontal ridge rather broad, sulcate at the ocellus, convex between the antennæ, punctate with black depressions along each margin for its full length. Lateral carinæ prominent, but little divergent. Pronotum nearly uniform in width, expanding slightly posteriorly; the median carina distinct only on the posterior lobe, and deeply cut by the three transverse sulci; posterior lobe punctate with dark impressions. Tegmina extending 5 mm. beyond the tip of abdomen; wings but little shorter. The terminal ventral segment turned up, narrow, acuminate, entire. The anal cerci are strongly bent upward near their middle, and bear on their lower edge a broad, triangular, wing-like expansion, the apex of which is opposite the bend.

Colour.—Face, occiput, and disk of pronotum a grayish-lilac with numerous fleckings of sooty black. A broad stripe of black starts from the eye and extends back along the upper side of pronotum to the posterior transverse sulcus. Tegmina grayish-olive, marked regularly over almost their entire surface with subquadrate fuscous spots which are much larger than those possessed by *femur-rubrum*. Wings transparent, tinged with pale yellow on basal third, the veins of apical fourth fuliginous. Three bands of black cross each femur and are alternated with bands of grayish-blue of the same width. Posterior tibiæ with the basal third red, the remainder gray with black spines; knees black; venter pale yellow, (alcohol changes the black to a reddish-brown, and the grayish hues to a dull yellow). Dimensions:—Length of body, ♂ 24 mm., ♀ 27 mm.; of tegmina, ♂ 20 mm., ♀ 22 mm.; of antennæ, ♂ 11 mm., ♀ 12 mm.; of posterior femora, ♂ 14 mm., ♀ 15 mm.

The peculiar mottled appearance, and the broad expansion of the anal cerci of the ♂, serve to distinguish this species from all other *Melanopti* of the E. U. S.

4. PEZOTETTIX HOOSIERI, nov. sp.

Antennæ of ♂ very long, exceeding the length of posterior femora. Vertex between the eyes narrow, scarcely as broad as the basal joint of antennæ, (broader in the ♀), expanding and prominent in front of the eyes where it is broadly but shallowly sulcate; foveola about twice as long as wide, slightly narrowed in front, more prominent in the ♀. Frontal ridge rather broad, regular, scarcely if at all sulcate below the ocellus;

lateral carinæ well developed, but little divergent. Pronotum broadening slightly on posterior half, (more noticeable in the ♀); median carina distinct and equal throughout, the transverse sulci scarcely noticeable in the ♀, distinct but shallow in the ♂; the lateral carinæ present but rounded obtusely off; the disk and sides of posterior lobe densely and rather coarsely punctate. Tegmina oblong, two and a-half times as long as broad, reaching to middle of abdomen and slightly over-lapping on the median dorsal line, the wings but little shorter. Last ventral segment of the abdomen of ♂ broader than high, tumid posteriorly, the lateral edges higher and flaring slightly outwards. Cerci long and slender, gently incurved, narrowed at the middle, with the apical third flattened and slightly hollowed on the exterior face.

Colour of living specimens:—Male—Antennæ rufous, infuscated at tip, and with the apical sixth of each segment yellowish. Face green, clypeus and mouth parts yellow. Vertex, disk of pronotum and tegmina plain olive, immaculate. Lateral lobes of pronotum greenish-yellow below; above with a broad, shining, black line reaching from the eye to their posterior edge. The venter pale yellow, and the meta-pleural episterna with an oblique yellow line. Femora green; knees black; posterior tibiæ greenish, rufous at base, with black spines.

Female—Duller; the disk of pronotum and tegmina sometimes with minute fuscous spots; a black stripe on the sides of abdomen, above which are numerous small black blotches.

Measurements:—Length of body, ♂ 22 mm., ♀ 31 mm.; of antennæ, ♂ 15 mm., ♀ 11 mm.; of tegmina, ♂ 10 mm., ♀ 13 mm.; of hind femora, ♂ 14 mm., ♀ 17.5 mm. 13 ♂'s, 11 ♀'s.

About the margin of the pond above mentioned, this *Pezotettix* was found in numbers on October 17th. It was at once noticeable on account of the length of the male antennæ, and the black stripes on the sides of the abdomen of the female. The pond was almost dry, and the dense growth of sedges and rushes which had filled its shallow margins, were, in some places, burned away. Over the burned spots had sprung up a dense green vegetation, and here this *Pezotettix* flourished in company with *Truxalis brevicornis* and *Chrysochraon viridis*, while a few feet away *Leptysmia marginicollis* found a suitable home amongst the rushes and sedges still standing.

Both sexes of *P. hoosieri* were very active, leaping vigorously when approached, and difficult to capture except by throwing the net over

them as they rested on the ground. The females were exceedingly difficult to kill in the cyanide bottle, "coming to" after having been kept in it for several hours, although the males and the other insects above mentioned were killed in a few minutes. On Oct. 27th the spot was again visited, and, although several heavy frosts had occurred, yet the species was still fairly common. At this time, however, they were all found in the small patches of grass which grew among the fallen leaves a few yards from the edges of the pond proper.

TETTIGINÆ.

5. *BATRACHIDEA CARINATA*, Scudder.

Batrachidea carinata, Scudd, Bost. Jour. Nat. Hist., VII., 1862, 479.

Thos. Syn. Acrid. N. A., 1873, 190.

Fernald, Orth. N. E., 1888, 49.

Tettix cristatus, McNeill, Psyche, May, 1891, 77.

Two males of this species were taken, in company with numerous young and adults of *B. cristata*, Harris, from a grassy hillside on April 1st, 1891. Although Bolivar, according to McNeill, has made *carinata* a synonym of *cristata*, yet, in my opinion, the two are as distinct as are the two common species of *Tettigidea*. *Carinata* has the pronotum extending 3 mm., and the wings 4 mm. beyond the tip of abdomen, whereas *cristata* has the pronotum of the same length as the abdomen and the wings lacking 2 mm. of reaching its tip. Moreover, the median crest of the pronotum is not so prominent nor so strongly arched in *carinata* as in *cristata*. Length of pronotum of *cristata*, ♂ 7 mm.; of *carinata*, ♂ 9.5 mm. *Carinata* has not before been reported west of New Jersey.

6. *TETTIX CUCULLATUS*, Burm.

Tettix cucullata, Scudd., Bost. Jour. Nat. Hist., VII., 1862, 475.

Thos., Syn. Acrid. N. A., 1873, 185.

Tettix cucullatus, Fernald, Orth. N. E., 1888, 47.

McNeill, Psyche, VI., 1891, 77.

Several half-grown young and two adults of this species were taken on April 1st, and on Sept. 15th a large number of adults were secured. It appears to be widely distributed over the Eastern U. S., its occurrence having been observed from New England to Sherman, Texas, at which latter locality I took a number of specimens on July 11th. It is evidently a water-loving species, as those taken in Texas, and most of those secured

in Indiana, were found along the damp, sandy or muddy margins of small streams, in company with *Galgulus oculatus*, a common Hemipteron, which abounds in like situations. *Cucullatus*, when disturbed, has a more prolonged flight than any other of our *Tettiginae*.

The life-history of the "grouse locusts" is, as yet, very imperfectly known. In the proper localities mature specimens of most of the six species so far noted in Indiana can be taken almost any day in the year. *Tettix ornata*, Say, and *Tettigidea polymorpha*, Burm, were found in copulation on April 18th, and the latter species again on May 31st; while, as noted above, the half-grown young of two species were collected on April 1st.

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No. 18, *Pezotettix viridipes?* Walsh, Mss., of my first paper, is *Pezotettix viridulus*, Walsh, as I have since determined by comparison with specimens of the latter taken by Prof. McNeill at Moline, Ill. It was the third full-grown species, other than *Tettiginae* taken last season, having been preceded by *Chortophaga viridifasciata*, De Geer, Apr. 26th, and *Arphia sulphureus*, Fab., May 20th. Two mature males of *P. viridulus* were taken on May 30th, and others were found at intervals throughout June, but it is by no means a common species in this locality.

FURTHER NOTES ON GELECHIA GALLÆDIPLOPAPPI, AND DESCRIPTION OF A NEW SPECIES OF BRACON.

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In a paper entitled "A Day in the Woods," I brought under the notice of the Entomological Society of Ontario, at its annual meeting held in London, on the 27th of August, 1890, the galls formed by *G. gallædiplopappi*, and gave an account of the chrysalis and perfect insect. I also alluded to two kinds of parasites preying upon the species. The description of the moth was reproduced in the December number of the CANADIAN ENTOMOLOGIST of that year (Vol. XXII., p. 248).

The insect has again come under my observation, and I am able to furnish these further particulars concerning it:—

The larva of the species when full grown is four lines in length. Its colour is light seal-brown, and it has a dorsal line of darker brown, and a few dark patches on the three last segments. Its head is black. There are a few bristles on the head and along the sides. It assumes the chrysalis form in the beginning of July.